

THE INFLUENCE OF OUTSOURCING ON JOB
SATISFACTION AND TURNOVER
INTENTIONS OF AIR FORCE CIVIL
ENGINEER COMPANY GRADE OFFICERS

THESIS

James F. Kennedy, Captain, USAF

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ABSTRACT (Maximum 200 Words) A survey was distributed to 865 active duty Air Force Civil Engineer company grade officers (CGOs) assigned to locations throughout the world. The survey was designed to assess the CGOs' current job satisfaction and their intentions towards making a career out of the Air Force. Additionally, the survey measured the CGOs' perceptions of outsourcing, and how they feel that it will influence the Civil Engineer career field. Relationships were evaluated between the perceptions of outsourcing and job satisfaction, and between job satisfaction and turnover intentions. Overall, Civil Engineer CGOs reported a slightly positive level of satisfaction and a negative perception of outsourcing. Path analysis revealed a negative relationship between job satisfaction and turnover intentions, and a positive relationship between the perceptions of outsourcing and job satisfaction. However, these relationships were only moderate.				
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THE INFLUENCE OF OUTSOURCING ON JOB SATISFACTION AND TURNOVER
INTENTIONS OF AIR FORCE CIVIL ENGINEER COMPANY GRADE OFFICERS

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THE INFLUENCE OF OUTSOURCING ON JOB SATISFACTION AND TURNOVER
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THESIS

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Finally, I would like to close by expressing extreme gratitude to my wife, Dalia. It was not easy to get married and complete a demanding graduate degree during the same 18 months, and only your love and constant support allowed us to make it through it. I am forever in your debt. – *Jim Kennedy*

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Abstract

A survey was distributed to 865 active duty Air Force Civil Engineer CGOs assigned to locations throughout the world. The survey was designed to assess the CGOs' current job satisfaction and their intentions towards making a career out of the Air Force. Additionally, the survey measured the CGOs' perceptions of outsourcing, and how they feel that it will influence the Civil Engineer career field. Relationships were evaluated between the perceptions of outsourcing and job satisfaction, and between job satisfaction and turnover intentions. Overall, Civil Engineer CGOs reported a slightly positive level of satisfaction and a negative perception of outsourcing. Path analysis revealed a negative relationship between job satisfaction and turnover intentions, and a positive relationship between the perceptions of outsourcing and job satisfaction. However, these relationships were only moderate.

THE INFLUENCE OF OUTSOURCING ON JOB SATISFACTION AND TURNOVER INTENTIONS OF AIR FORCE CIVIL ENGINEER COMPANY GRADE OFFICERS

I. Introduction

Dwindling resources and the competitiveness of capitalistic markets have forced organizations to examine their methods of producing goods and services in order to maximize economic returns. Outsourcing, or competitive sourcing, is one method that has purportedly streamlined business process and has boosted organizations' competitive positions. Essentially, outsourcing is the transfer of commercial services or functions previously performed within an organization to a provider outside the organization (Johnson, 1997: 85). By allowing an outside organization to fulfill certain organizational functions, organizations are able to downsize staffs and save salaries while focusing all their remaining resources and efforts toward their core mission—providing their distinctive product or services to customers.

Given the financial motivation behind outsourcing, researchers have examined many of the financial aspects of outsourcing. Indeed, Klaas, McClendon, and Gainey (1999) suggested an organizational profile of organizations that said outsourcing would lead to desirable benefits when they reported that organizations could reap financial benefits from outsourcing certain functions by reducing costs and refocusing efforts toward core competencies. In contrast, others have found that outsourcing efforts were not always successful. Ulrich (1996) found that outsourcing could stifle the development

of core competencies and lead to problems because the new service-providers lacked firm-specific knowledge and engaged in opportunistic behavior.

Regardless of the ultimate effectiveness of outsourcing, a variety of changes take place when organizations implement this strategy. Positions within the organization are often realigned or eliminated. As positions are eliminated, the size of the organization is often reduced. Personnel who remain employees of outsourced organizations must learn new skills, often focused on the management of the contractors to whom the outsourced contract was awarded. Managers must address the fears and concerns of the employees who remain with an organization after outsourcing is implemented. Does outsourcing directly or indirectly influence the retention of these employees who remain? Additional research is required to assess these and other effects on the "human" part of organizations that implement outsourcing initiatives.

The United States Air Force is one such organization that is currently undergoing a massive outsourcing effort. Since 1995, all federal agencies have been encouraged to outsource commercial activities whenever possible (GAO, 1997: 2). Many of these efforts have been aimed at base support functions, especially within the Air Force Civil Engineer community.

The purpose of this study is to investigate the effects of outsourcing on the job satisfaction and turnover intentions of Air Force Civil Engineer company grade officers (CGOs). Reviews of organizational behavior literature and comments from the Air Force Civil Engineer career field identified these personnel issues as areas of concern that arise when organizations undergo a major change, such as outsourcing. This research will identify areas of concern for Air Force leaders who are currently in the process of

deciding whether or not outsourcing is the best solution for them. By linking it to job satisfaction and turnover intentions, this study will add a "human resources" perspective to the research that has previously been conducted on outsourcing.

Theoretical Perspective

Major transitions unleash powerful conflicting forces in people, invoking simultaneous positive and negative personal feelings of fear and hope, anxiety and relief, pressure and stimulation, leaving the old and accepting a new direction, loss of meaning and new meaning, threat to self-esteem and new sense of value (Reinke, 1998: 1). Leaders of organizations that implement outsourcing must carefully consider some of the possible implications of the process; not all of the results are positive.

Personnel who work for companies that are considering outsourcing measures share common concerns, such as fear of the unknown, anxiety over the future, nostalgia for the old days, and resentment over the loss of identity (Johnson, 1997: 88). Organizations that implement outsourcing must ensure that their personnel are able to overcome these types of psychological barriers that are associated with major organizational changes.

One idea presented in organizational psychology literature is the theory that major organizational changes can negatively influence job satisfaction. This is based on the premise that regardless of their nature, the changes are often viewed as unnecessary. Negative attitudes towards implemented changes are associated with reduced levels of job satisfaction. Employees that feel that changes are forced upon them generally feel lower levels of job satisfaction (Ferguson and Cheyne, 1995: 105).

This thesis posits outsourcing as the organizational change of interest. When making outsourcing decisions, organizational leadership must consider the theory that change can influence job satisfaction. Job satisfaction has been one of the most frequently used tools in the human relations movement of management since the Hawthorne studies of the 1920s, having frequently been used as a predictor of intent to quit and employee turnover. Many theories of turnover share the idea that low levels of job satisfaction directly influence an employee's intent to quit. The intent to quit then leads to the actual turnover decision (Gruneberg, 1979: 114).

In the modern business world, organizations dedicate a lot of resources to training highly-specialized employees; thus one would believe that turnover is an important phenomenon to them. In order to receive a return on the resources used to train their employees, organizations must ensure that their employees remain with the organization. In order to be useful, however, turnover information must be obtained *before* the employees actually make the decision to leave the organization. Therefore, greater emphasis is placed on turnover intentions, since intentions influence the behaviors that follow (Shore and Martin, 1989: 635).

Organizational behavior scientists have identified relationships between organizational change, employee job satisfaction, and employee turnover. Paul Spector summarized many of the most popular theories in his 1997 book, Job Satisfaction: Application, Assessment, Causes, and Consequences. Spector presented a model of turnover intention that proposed that certain personal and organizational factors combine to influence employee satisfaction, which then in turn influences turnover intentions (Spector, 1997: 63). Spector's research was consistent with previous research, in that it

showed that the thought or intention of quitting was most often the cognitive action immediately preceding employee turnover (Mobley, 1977: 237). This argument is built on the framework that intent to quit then influences the decision to seek alternate employment, which is then in turn influenced by the availability of alternatives (unemployment rate).

This thesis focuses on the job satisfaction and intent to quit section of Spector's model, and proposes two additional links. First, the link between organizational factors and job satisfaction will be examined. Outsourcing will be presented as a specific organizational factor over which the CGOs have no control. Their perception of outsourcing will be used to establish the relationship between outsourcing and job satisfaction.

The link between job satisfaction and turnover intention will be examined. The relationship between the perceptions of outsourcing and job satisfaction will be investigated in order to determine if the relationship can be used as a predictor of turnover intentions. Additionally, a direct link between perception of outsourcing and intent to quit will be examined to determine if outsourcing directly influences turnover intentions.

Finally, this thesis will propose two additional links to the model. First, perceptions of outsourcing will be examined as a potential direct influence on turnover intentions. Two controlling factors will be examined. The link between time in service and intent to quit will be examined for significance, based on the assumption that military members are conscious of the pension that looms in their distant future. A possible link

between major command and intent to quit will also be investigated, in order to determine if place of assignment contributes significantly to turnover intentions.

The model shown in Figure 1 is based on the model that Spector presented in his book, and is the cornerstone for the hypotheses evaluated in this thesis. The H_i notations correspond to the research hypotheses that will be developed in chapter 2.

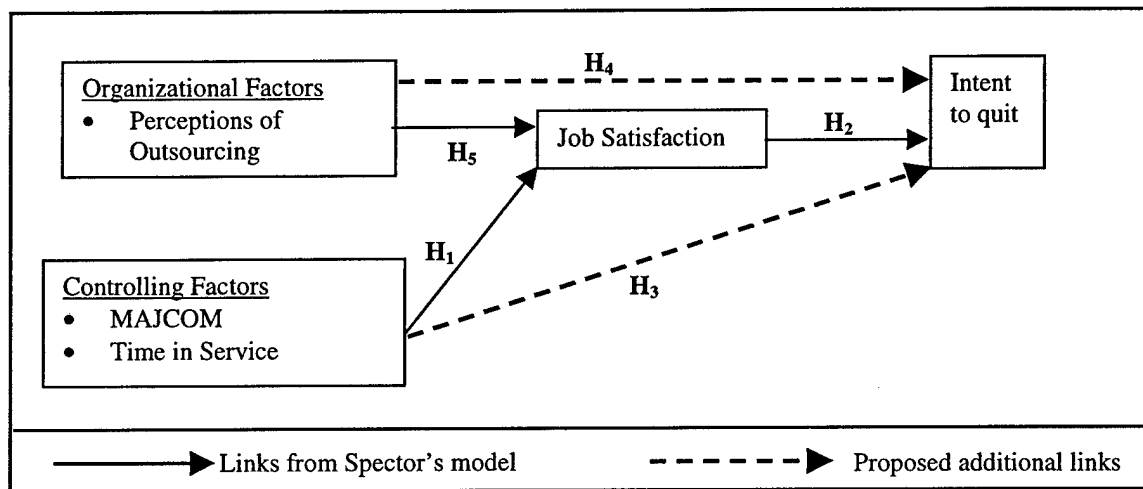


Figure 1. Model of Change, Job Satisfaction, and Intent to Quit (Adapted from Spector, 1997)

Air Force Situation

As previously noted, the Air Force is currently implementing outsourcing in its base support functions. In her article in the Winter 1998 issue of Airpower Journal, Lt Col Sandra J. Reinke states,

“Change is frightening. In this age of downsizing, reorganization, movement of units, base closures, frequent deployments, outsourcing, and privatization, change is everywhere. Such major changes to the way we’ve always done business in the air force have left many people feeling disoriented and lost.”

The U.S. military is subject to many of the same sources of change that private organizations must face. Air Force Manual 10-100 states, "The world is changing fast. New threats, new technologies, and new tools are changing the way we prepare for conflict." Although most military personnel are accustomed to dealing with minor changes, it is critical that military leaders prepare their personnel for major changes that affect the entire organization or large parts of the organization. Applying the theories that were introduced earlier, it would seem to be in the best interest of military leaders to take steps to maintain satisfactory levels of job satisfaction among their personnel in order to prevent negative influences on turnover intentions. Because the modern military is forced to operate with fewer resources, the retention of its highly trained personnel has become increasingly critical.

Neither private nor public organizations can afford to ignore the economic benefits of outsourcing. Air Force Pamphlet (AFP) 26-12 states, "A governmental function is one that is so intimately related to the public interest as to mandate performance by Department of Defense employees." These functions include those activities requiring either the exercise of discretion in applying governmental authority or the use of value judgment in making decisions for the government." It defines a commercial activity as, "An activity that provides a product or service obtainable from a commercial source. A commercial activity is not a governmental activity." Consistent with the previous definition of outsourcing, the GAO defines outsourcing as, "Contracting out to the private sector to operate and/or maintain a commercial activity." The government still maintains ownership of the facilities, systems, and equipment associated with the commercial activity. These outsourcing decisions assure mission

success while applying maximum resources to purely governmental functions (GAO, 1997: 2). Little research has been done to determine the influence outsourcing has had on the job satisfaction and career decisions of the personnel affected by these decisions.

Specific outsourcing efforts have been aimed at base support functions. The practical, working classification of a "commercial activity" has come to include any activity that cannot be directly tied to a warfighting mission. In 1996, the USAF "estimated that it had outsourced 64 percent of its workforce performing commercial activities. From 1996 to 2003, the USAF plans on studying up to 60,000 additional positions for potential outsourcing (Romasz, 1999: 2). Most of these positions fall within the realm of base support service. The Air Force Civil Engineer has identified 10,433 military and civilian authorizations as candidates for competitive sourcing, representing 17% of the career field (Thomas, 1999: 1).

Middle management is often influenced the most by major organizational changes (George and Jones, 1996: 319). The Air Force Civil Engineer community is currently experiencing low manning levels in its junior officer ranks. After fulfilling special taskings, career broadening taskings, and educational quotas, the Civil Engineer career field is already at a low 69% effective manning level for captains (AFPC, 1999). For this reason, the Air Force must take special care to consider the opinions of its company grade officers, particularly their views of issues that may be tied to retention.

As more proposals to outsource the majority of stateside, non mission-essential Civil Engineer services are approved, Air Force Civil Engineer leaders will require additional understanding of the influence the proposals will have on the job satisfaction and career intentions of their CGOs. Assignment options and job options will become

more limited for the active duty Civil Engineer force. This, along with the outsourcing-induced organizational changes, will influence job satisfaction among Civil Engineer officers. Further study is required to identify the magnitude of the influence of outsourcing on these personnel issues.

Research Question

Many Air Force Civil Engineer commercial activities have been outsourced, and more are currently being studied as candidates for outsourcing. This research effort focused on answering the following question: What are the perceptions of outsourcing among Air Force Civil Engineer CGOs and how do they feel outsourcing will influence their job satisfaction and turnover intentions?

Scope

This study focused on the relationships between job satisfaction, perception of outsourcing, and turnover intentions of Air Force Civil Engineer Company Grade Officers. It compiled a general “feeling” among Civil Engineer CGOs regarding outsourcing, and then tied back to the issue of retention. Eventually, the results will be provided to Air Force Civil Engineer leaders for consideration when planning for further implementation of outsourcing measures across the career field.

Thesis Organization

This thesis is organized into five chapters. Chapter I, Introduction, introduces the background theories central to the study, the purpose of this study, and the primary research question. Chapter II, Literature Review, establishes a baseline for work that has

been accomplished in similar areas. It explores in greater detail the development of the theories by researchers in the field, and develops the research hypotheses that will be used to answer the research question. Chapter III, Methodology, outlines the development of the survey used to gather the data, and the briefly introduces the statistical methods to be used to analyze the data. Chapter IV, Analysis, conducts an extensive statistical analysis of the data, applying the method of path analysis to the model developed in this thesis and analyzing the research hypotheses. Chapter V, Conclusions, presents a summary of the research, the conclusions of this author, and recommendations for further research and application.

II. Literature Review

The purpose of this chapter is to examine journal literature relevant to this field of study, apply the previously mentioned organizational theories to the situation currently faced by the Air Force Civil Engineer career fields, and develop the research hypotheses for this research effort. First, it will establish a baseline for research that has been done on outsourcing, and identify the need for research into the “human” issues that result from outsourcing. Second, it will outline research that has been done to establish the theorized relationship between organizational changes and job satisfaction. Third, it will explore the theory that job satisfaction influences employee turnover. Finally, using these relationships and the model that was presented in Figure 1, the research hypotheses will be developed.

Previous Outsourcing Research

Outsourcing, or competitive sourcing, is today’s trend in facility maintenance. Spurred by ever-tighter budgets, corporations are turning to the private sector for infrastructure maintenance. This approach promises lower costs and better service, goaded by free market competition, allowing the parent company to focus on its central mission (Hayner, 1995: 1).

Not surprising, considering its financial roots, the majority of the outsourcing literature has emphasized the financial effectiveness of outsourcing programs (Saleck, 1998). Other research has examined the actual products produced by outsourced organizations, scoring the organizations on their ability to meet their stated goals and perform their core competencies (Ellmeyer and Jang, 1995). There are, however, few studies on the effects of outsourcing on employees of organizations that implement

outsourcing, and on these employees' reactions to the changes brought about by outsourcing. Johnson (1997) presented several ideas for consideration when people enter into the outsourcing equation, but no in-depth analysis of actual data. This study will dive into the "human resources" side of outsourcing and attempt to quantify some of the different ways that outsourcing influences the people of the organization. The following is a brief introduction to some of the outsourcing research reviewed, and an introduction to the direction taken in this thesis.

Financial returns are the most convincing argument in the favor of outsourcing. Saleck (1998) reported several examples of public agencies that saved money by outsourcing their commercial activities. Saleck conducted her study by examining the financial records of various public and private agencies that have implemented outsourcing programs. According to her study, New York City converted a \$2 million per year loss into a \$200,000 per year gain when it turned the management of five golf courses over to the American Golf Corporation in 1983 (Saleck, 1998: 2). Fairfax County, VA, switched from in-house to contracted operation busses serving the Washington, D.C area and saved \$2.25 per mile—almost 50 percent cost savings (Holzinger, 1992: 21).

Obviously, outsourcing is a business practice that can reduce organizational operating costs. Product quality is a second area that outsourcing strives to improve. The process of implementing outsourcing frees up resources that can then be reapplied to the organization's primary missions. The Air Force Civil Engineer has turned to outsourcing to sustain the ability to support the war effort (Armesto and Buschur, 1998: 27).

Other examples in industry can be found that support the notion that outsourcing is more than just saving money. Outsourcing is also a way of conserving capital, tapping into other companies' production expertise, and getting new products to market fast (Siekman, 1998: 238). Agricultural equipment giant, John Deere Inc., began an outsourcing venture in 1991 with MetoKote Corp. MetoKote is the company that applies the famous "John Deere green" coatings to all John Deere Inc. products. Now MetoKote pays the salaries of the painters, keeps up with the ever-changing EPA regulations, pays the shipping and packing costs, and maintains the technical staff necessary for a painting operation. John Deere Inc. is free to spend time on what it does best—its core competency—producing top-quality tractors. John Deere Inc.'s new plants are little more than design and welding shops (Siekman, 1998: 239).

This review of outsourcing research revealed several discussions on outsourcing's financial and practical merits. Clearly, organizations that implement outsourcing can expect to benefit both financially and in their ability to fulfil their primary mission. Doubt remains, however, as to the affect outsourcing will have on the personnel of the organizations once outsourcing has been implemented. Outsourcing is accompanied by major organizational changes, and additional research is required to determine the extent that these changes will influence the myriad of personnel issues faced by organizational leadership.

Organizational Change Influences Job Satisfaction

For most organizations, outsourcing is a major change from the "normal" way of conducting business. Many factors influence the way that employees receive

outsourcing, such as the way it is initially presented. Many people may have fear of the unknown, anxiety over the future, hostility to new ideas, and resistance to the new way of doing things. In addition, people often want to hear what is going on from top management and want to know how their employment rights and work conditions will be impacted (Johnson, 1997: 88).

One personnel issue thought to be influenced by organizational change is job satisfaction. Ferguson and Cheyne (1995) discussed a number of psychological factors that were thought to be associated with job satisfaction. Among the factors they discussed were workload, participant decision making, and attitudes towards change. Of these, employees' attitudes towards change are particularly relevant to this research. Ferguson and Cheyne theorized that organizational changes, regardless of their nature or how they are managed, will be viewed as unnecessary. Negative attitudes towards the change itself were associated with reduced levels of job satisfaction (Ferguson and Cheyne, 1995: 102).

In order to test their theory, Ferguson and Cheyne examined a change in a major university's undergraduate degree teaching practices. The change they studied was a shift from a quarter system to a semester system. During the transitional period, a two-semester system was superimposed on the original three-quarter system. The departments redesigned courses to fit the semesters, and changed examinations to reflect the new semester-hour credit ratings for each class. These changes were implemented during the 1992-1993 academic year. Ferguson and Cheyne conducted a retrospective survey of the university staff using stratified random sampling techniques. They

surveyed both academic and support staff, receiving responses from 256 out of 450 individuals (54.6%).

The survey was designed to assess the employees' workload quality, work attitudes, and general job satisfaction. In order to ascertain the employees' perceptions of the workload and quality of work, they asked questions concerned with the amount of work, time spent at work, and quality of work. Individuals' attitudes towards the implementation of change were gathered using questions based on their frustration with job prospects, concerns as to whether their job changed for the better, anxiety over the future, and their job security. Finally, the general job satisfaction measure from Cooper, Sloan, and William's "Occupational Stress Indicator" was used to provide a general summary of job satisfaction (1998).

Ferguson and Cheyne found that their data did indeed support their hypothesis that job satisfaction would be lower after a major organizational change. The employees who, "felt more anxious, had experienced an increase in workload, and/or felt that the changes were forced on them reported lower levels of job satisfaction." Their findings indicate that the method for implementing change may be irrelevant; the substance of the change itself produces feelings of dissatisfaction (Ferguson and Cheyne, 1995: 106).

Additional research has attempted to narrow this focus to specific types of change. Nelson, Cooper, and Jackson (1995) studied the impact of privatization on employee job satisfaction and well being. Their study focused on the change associated with the privatization of a regional water authority in Great Britain. Ownership was transferred from public to private in two stages. In stage one, service functions were privatized. In the second stage, functions such as personnel, scientific support, and

finance were centralized at the company head office. The water authority was an organization that had experienced a lot of change in recent years; between 1983 and 1989, the workforce had been reduced by approximately 25 percent, management had been reduced, and many jobs within the organization had been redefined. Nelson, Cooper, and Jackson theorized that the employees had withstood as much change as possible without the organization experiencing negative consequences. They anticipated that the major changes brought about with privatization and restructuring would negatively influence the employee's job satisfaction and well being.

A survey of 1500 employees was conducted in three stages over the two years during which the changes were being implemented. Of the initial 1500 employees surveyed, 397 responded to all three stages of the survey. Their sample was broadly categorized into three broad occupational groups: staff, managers, and manual workers. After collecting the data, they analyzed it at each of the three stages. Statistically significant differences were noted between stages one and two and again between stages two and three. All three groups experienced a reduction in job satisfaction at stage two, after privatization, supporting their theory. Between stages two and three, however, all three groups experienced a slight increase in job satisfaction (Nelson, Cooper, and Jackson, 1995: 58).

While not directly supporting their hypothesis, this result did not automatically discount it. Not all of the employees were directly affected by the changes that took place between stages two and three. Additionally, research has been conducted to show that employee commitment acts to moderate the effects on job satisfaction after organizational change (Begley and Czapka, 1993: 552). The water authority employees

who survived the personnel cuts of the 1980s were a hardy group of battle-scarred veterans, more committed to the organization than those who had been laid off or who had sought employment elsewhere.

In these situations, major organizational changes had significantly influenced the job satisfaction of the organizations' employees. Thus, the first research hypothesis for this thesis was developed:

H₁: A positive, statistically significant relationship exists between the perceptions of outsourcing and job satisfaction

Job Satisfaction and Turnover

Beginning with the Hawthorne studies of the 1920s, the major hypothesis of the human relations movement in management is that the satisfied worker is a productive worker. There is, however, little conclusive evidence to lend truth to this theory (Bassett, 1994: 61). If this is the case, then why conduct job satisfaction research at all? Even if satisfaction and work performance are unrelated, many research findings remain that suggest continuing business relevance in the assessment of worker satisfaction. One issue that has been consistently related to employee's satisfaction is employee turnover and retention (Bassett, 1994: 62).

Traditional turnover research suggests that turnover occurs for voluntary or involuntary reasons. Employees who leave for involuntary reasons are generally excluded from analysis (Ableson, 1987: 382). Early research of voluntary turnover pointed towards a direct link between job satisfaction and employee turnover. In 1977, William H. Mobley reviewed the literature on this relationship, and reported that

although there was a consistent, negative relationship between job satisfaction and turnover, there was also a great deal of variance. Mobley theorized that, "Other variables mediate the relationship between job satisfaction and the act of quitting." He went on to argue that more emphasis should be placed on the withdrawal process than the actual withdrawal. Mobley presented a series of intermediate steps in the withdrawal decision process. He suggested that "thinking of quitting" is the first action that takes place after a person experiences a significant loss of job satisfaction. This is then followed by developing actual intentions to quit, which Mobley suggested is the last step before actually quitting (Mobley, 1977: 237).

Other research has focused on the idea that an individual's outlook significantly influences his or her job satisfaction. Each person has unique qualities that determine their personal outlook on life. These personal factors are things such as value attainment, life satisfaction, and positive mood. Value attainment is the extent to which a job helps an individual attain life values. Values help people choose, evaluate, and give meaning to their work experiences. Attitudes have to do with how the individual evaluates the job. They are tied to the array of feelings and thoughts that arise from actual work experiences with a particular job. Moods capture how one feels when doing the job. Moods are not tied to specific objects, events, or situations, and can influence every aspect of a person's work experience (George and Jones, 1996: 319). This relationship between job satisfaction and turnover intentions was used to shape the second research hypothesis:

H₂: A negative, statistically significant relationship exists between job satisfaction and turnover intentions

Turnover Models

Turnover research has traditionally focused on job satisfaction as a predictor of turnover. Further research has shown that the intention to leave an organization actually precedes an employee quitting the organization, and thus intent to quit is the best predictor of turnover. In their "Unfolding Model" of employee turnover, Lee et al. (1996), attempted to identify other intermediate steps in the turnover process. Most relevant to this thesis is their idea that a "shock" to the system precedes intention to quit (Lee et al., 1996: 6).

The unfolding model's major components included "shocks to the system and the amount of psychological analysis that precedes a decision to quit and the act of quitting. Shocks are particular events, either personal or organizational, that initiate the decision making process for quitting a job" (Lee et al., 1996: 6). One of the proposals of this thesis is that major organizational changes directly influence employees' job satisfaction, which in turn influences their intent to quit. Major organizational changes, such as outsourcing, would be viewed by Lee et al. as such "shocks."

Lee used a multiple case study design to test his hypotheses. Forty-four nurses who had voluntarily quit jobs at hospitals were interviewed in-depth. The interview questions addressed shocks, job seeking behavior, job satisfaction, and personal factors that were thought to contribute to the intention to quit. In 55% of the cases Lee studied, job satisfaction was shown to precede the decision to search for alternative employment and subsequent quitting. Additionally, 58% of the cases reported a shock as having an effect on their decisions to quit. Issues such as training and job content appeared to have a greater influence on intent to quit than did economic compensation. This work supports

this thesis's notion that organizational changes can influence job satisfaction and turnover intentions, and is the foundation for the third research hypothesis:

H₃: A negative, statistically significant relationship exists between Air Force Civil Engineer CGOs' perceptions of outsourcing and turnover intentions

Since his research with Carlsen in 1987, Spector has continued to study the relationships between job satisfaction and turnover. He suggested that personal and organizational factors combine to influence an individual's job satisfaction. Personal factors are aspects of an employee's life that cannot be controlled by the organization, or that are not directly influenced by the organization. Organizational factors are those factors that result from within the employing organization. These factors combine to cause an employee to gain or lose job satisfaction. If the job satisfaction level is sufficiently low, the person will develop a behavioral intention to quit the job. That intention may lead to job search activities, which during periods of low unemployment often leads to actual turnover (Spector, 1997: 63). Since unemployment has reached record lows during the late 1990s, satisfaction could become an increasingly important predictor of turnover intentions.

Place of assignment and time in service are two factors that weigh heavily into the decision making process for most military service members. In order to account for the effects of such organizational and individual factors, the respondents' major command and their time in service were assessed and entered into the analysis as controlling factors (see Figure 1 in Chapter 1). These controlling factors were used to develop the remaining two research hypotheses.

H₄: A negative, statistically significant relationship exists between the controlling factors and turnover intentions

H₅: A positive, statistically significant relationship exists between the controlling factors and job satisfaction

Summary of Journal Literature

First, a review of previous outsourcing research revealed that although its financial and product-effectiveness aspects have been studied, little has been done to assess the influence of outsourcing on the personnel who remain in organizations that have been outsourced. Second, two popular theories, both involving job satisfaction, were extracted from available literature. The idea was presented that major organizational change, or shocks to the system, can negatively influence job satisfaction. Outsourcing represents the major organizational change for the purpose of this study. Additionally, the theoretical relationship between job satisfaction and employee turnover intention was established, citing the work of Spector (1997). Finally, intermediate variables such as personal and organizational factors, and turnover intentions were identified and explained. The literature reviewed indicated that, although not always conclusive, job satisfaction data has withstood the test of time; relevance has been added by relating it to retention and turnover intention.

III. Methodology

This chapter is dedicated to the mechanics of the research effort. In order to evaluate the research hypotheses, a survey was used to measure job satisfaction, perceptions of outsourcing, and career intentions among Air Force Civil Engineer CGOs. The demographics of the survey respondents are reviewed in order to identify response trends based on the participants' time in service, grade, or their Major Command. This chapter then addresses the methods used to develop individual survey items and the reliability of the items when combined into common scales. Finally, the chapter concludes with a brief introduction of path analysis, the primary statistical procedure used to analyze the data.

Population

Efforts were made to mail surveys every CGO in the Air Force Civil Engineer career field. A list of 995 names and addresses was obtained from official Air Force personnel records. Of these, 120 were eliminated for various reasons. Of the 120 that were eliminated, 40 were eliminated because they were in the process of transitioning into new Air Force career fields, reducing the total population to 955. The remaining 80 were eliminated because the addresses provided were inaccurate or of a classified nature.

Sample

The surveys were mailed to 865 of 955 Civil Engineer CGOs. Twenty-eight surveys were returned due to insufficient address, permanent change of station, or other reasons, further reducing the number of individuals who received the surveys to 837. Of

these, 469 completed and returned the surveys, which represents 56% of those people successfully contacted. Tests of proportions indicated that the sample reflected the population of interest. Captains represented 57% of the sample, while they comprised 56% of the population. First lieutenants represented 24% of the sample, while they made up 21% of the population. Second lieutenants represented 19% of the sample, and 23% of the population. This data supported the conclusion that there was no significant bias based on the grade of the respondents.

Survey Development

A 21-item survey was used to assess job satisfaction and the perception of outsourcing and turnover intentions. The following is a detailed account of the development of each of the survey items. Participants responded to all items using five response categories: (1) Strongly disagree, (2) Disagree, (3) Neither agree nor disagree, (4) Agree, and (5) Strongly Agree. A complete copy of the survey is provided in Appendix A. Detailed descriptive statistics for each item are provided in Appendix B.

Controlling factors. Three survey items were used to identify the respondents' active duty grade, time in service, and the major command to which they were assigned. Respondents indicated their active duty grade by marking captain, first lieutenant, or second lieutenant. Next, respondents indicated the total number of years and months that they have been on active duty. The last controlling factor assessed was the respondents' major commands. Respondents marked the command to which they were assigned, choosing from ACC, AMC, PACAF, USAFA, AFSOC, AETC, USAFE, AFPC, and OTHER.

Job Satisfaction. Job satisfaction was measured with seven survey items that were based on work satisfaction measures developed by Smith, Kendall, and Hulin (1969). The items asked the extent to which participants were satisfied with their pay (2 items), the work they do (3 items), and responsibility (2 items). Table 1 lists the exact items that were used.

Table 1. Job Satisfaction Survey Items

<i>Item*</i>	
4. I am satisfied with my ability to maintain my standard of living	Pay
5. I am satisfied with my current economic security	
6. I am satisfied the work that I do is important to the USAF mission	Nature of the work itself
7. I am satisfied that my current job is challenging	
8. I am satisfied that my current job is rewarding	Responsibility
9. My job holds responsibility commensurate with my time in service	
10. My job is preparing me for positions of greater responsibility	
<i>*Note. Item numbers represent the order in which items were presented in the original questionnaire</i>	

Knowledge of Outsourcing. One item was designed to assess the level of understanding of the current outsourcing policy in the Civil Engineer career field. This item simply asked, "I am aware of the official USAF Civil Engineer policy concerning outsourcing as the concept applies to the Base Civil Engineer Function." A broad understanding of outsourcing policy reassured the researcher that the respondents were in fact communicating intelligent feelings about the issue.

Perceptions of Outsourcing. Five survey items were written by the researcher to measure the influence of the respondents' perception of outsourcing on their job satisfaction. These items mirrored five of the items used to assess present job satisfaction. For example, one job satisfaction item asked, "I am satisfied that my current

job is challenging.” In turn, one of the perception of outsourcing items paralleled this by asking, “After outsourcing has been implemented in the Civil Engineer career field, I feel my job will be challenging.” Due to negative wording, two perception of outsourcing items were reverse scored so that their scales were consistent with the other items, such that more positive responses indicated that outsourcing would provide a satisfying work situation.

One additional survey item asked whether or not the respondents felt that outsourcing would negatively influence the Civil Engineer career field. This item was also reverse-scored to correct for negative wording. As will be shown in the factor analysis section, this variable loaded well with the perception of outsourcing items. Based on this result, the item was combined with them to form one common variable that was used in path analysis. The items used to assess the perception of outsourcing are listed in Table 2.

Table 2. Perception of Outsourcing Survey Items

<i>Item*</i>
13. Outsourcing civil engineer functions will negatively influence my role as a USAF Civil Engineer officer (R)
14. After outsourcing has been implemented in the Civil Engineer career field, I feel my job will be challenging
15. After outsourcing has been implemented in the Civil Engineer career field, I feel my job will be rewarding
17. I feel that my job will hold responsibility commensurate with my time in service after outsourcing has been implemented
18. After outsourcing has been implemented in the Civil Engineer career field, I feel that my future promotion opportunities will be negatively influenced (R)
21. As outsourcing becomes widely implemented, I feel that the Civil Engineer career field will be negatively impacted (R)
<i>*Note. Item numbers represent the order in which items were presented in the original questionnaire</i>
<i>** (R) indicates items that were reverse-scored</i>

Career Intentions. Two survey items written by the researcher assessed the respondents' career intentions. One item asked the respondents' current career intentions; the second pitted outsourcing (future) against the present situation and asked participants if they felt outsourcing has caused them to rethink their career intentions.

Factor Analysis

In order to establish construct validity for job satisfaction, perception of outsourcing, and intent to quit, an exploratory factor analysis was conducted with a varimax rotation. By using this technique, the researcher was able to draw more meaningful conclusions about the relationships that the items attempted to measure (Nunnally and Bernstein, 1994: 449). The seven job satisfaction items, five individual perception of outsourcing items, and the global perception of outsourcing items were analyzed concurrently, and the results are summarized in Table 3, where survey item numbers shown correspond to the item numbers used in the original questionnaire.

Table 3. Factor Loadings for Varimax

<i>Survey Item #</i>		<i>Factor Loading</i>		
<i>n=469</i>		<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>
Job Satisfaction	Survey Item # 6	.76	.04	.14
	Survey Item # 7	.83	.08	.04
	Survey Item # 8	.84	.03	.08
	Survey Item # 9	.73	.03	.09
	Survey Item # 10	.78	.02	.01
Perception of Outsourcing	Survey Item # 13	-.09	.75	.08
	Survey Item # 14	.21	.53	-.09
	Survey Item # 15	-.09	.79	.03
	Survey Item # 17	.09	.73	-.05
	Survey Item # 18	-.06	.63	.07
	Survey Item # 21	-.09	.79	.03
Pay Satisfaction	Survey Item # 4	.13	.04	.90
	Survey Item # 5	.12	.03	.90

The factor analysis confirmed that the survey items measured different factors. The items that dealt with work satisfaction and responsibility loaded well on the first factor. These items were averaged to form the job satisfaction variable. This variable was used in the path analysis section to represent average job satisfaction.

The individual perception of outsourcing items and the global perception of outsourcing item loaded well on the second factor. Similar to the job satisfaction items, these measures were averaged to form one perception of outsourcing variable to use in the path model.

Finally, the first two job satisfaction measures loaded well on the third factor. These were the two items constructed to measure satisfaction with pay. These results agreed with previous research that showed that pay satisfaction items frequently load independently of the nature of work items (Smith et al., 1969: 70). These two items were combined to form the pay satisfaction variable that was used in the path analysis.

Scale Reliability

In addition to the factor analysis, internal consistency investigations were conducted to further investigate the appropriateness of the proposed job satisfaction and perception of outsourcing scales. Cronbach's alpha scores were computed for each construct (pay satisfaction, job satisfaction, perception of outsourcing). Cronbach's alpha is a measure of internal consistency and indicates how reliably different items measure a construct. Research conducted by Smith et al. (1969) showed that internal consistency estimates were as high as 0.83 for items related to work, pay, promotions, and other job-related issues (Smith et al., 1969: 74). The values for Cronbach's alpha range from zero

(no internal consistency) to one (perfect internal consistency). A scale is said to be sufficiently reliable if Cronbach's alpha is greater than 0.80, and is most likely reliable for values greater than 0.70 (Cronbach, 1951: 297).

Cronbach's alpha was 0.81 for the two-item pay satisfaction scale, 0.86 for the five-item job satisfaction scale, and 0.79 for the six-item perception of outsourcing scale, indicating that these items coalesced together to represent their respective constructs. These estimates were consistent with previously reported estimates computed for similar measures of job satisfaction by Smith et al. (1969).

Statistical Methods

This thesis used hierarchical regression and path analysis. Path analysis is a method of structural equation modeling used to validate its proposed models. Path analysis is a method of conducting a complicated web of regression operations; each dependent variable is individually regressed by each independent variable that it is predicted to be affected by. The resulting regression weights and independent variable correlations indicate the strength and direction of the relationships among hypothesized variables. (Grimm and Yarnold, 1995: 65). In essence, it is used to test a priori relationships among variables.

In chapter 4, the model that was presented in Figure 1 will be transformed into path analysis format, and path analysis will be conducted in order to determine the strength of the causal relationships. The following is a brief explanation of the background, method, and use of path analysis to validate proposed structural models.

Background. Geneticist Sewall Wright first used path coefficients in 1918 to explore genetic relationships and inheritance theories. Since then, the method has been expanded by social scientists as a method of exploring linear, additive, and asymmetric relationships among a set of variables that are measurable on an interval scale, although some of them may not be directly measurable and may even be purely hypothetical (Duncan, 1966: 2).

Path analysis can be used in both exploratory and confirmatory data analysis. This thesis uses path analysis to conduct a confirmatory analysis; the researcher specifies a model and structural equation modeling is used to test its significance. If the fit is acceptable, the researcher will have confirmed that the model might be one plausible way of representing the system. This confirmation does not necessarily prove validity (trueness), as research can at best falsify theory, and can never quite confirm it (Popper, 1968: 5). Models are abstracted and simplified versions of reality, studying only its most essential items (King, 1991, 1045). Path analysis is one method of confirming the relationships between these items.

Method. It is worth mentioning again that path analysis is not intended to discover the causes of various effects; rather the process is intended to analyze the causal models formed on the basis of current knowledge and theoretical considerations. The causes of the effects have already been “assumed.” This process provides evidence to support the hypothesized relationships or evidence to discount them.

Path analysis can be explained with a diagram. Figure 2 is a simplified example of a path diagram, similar to the one used in Chapter 4 to analyze this thesis’s hypothesized model.

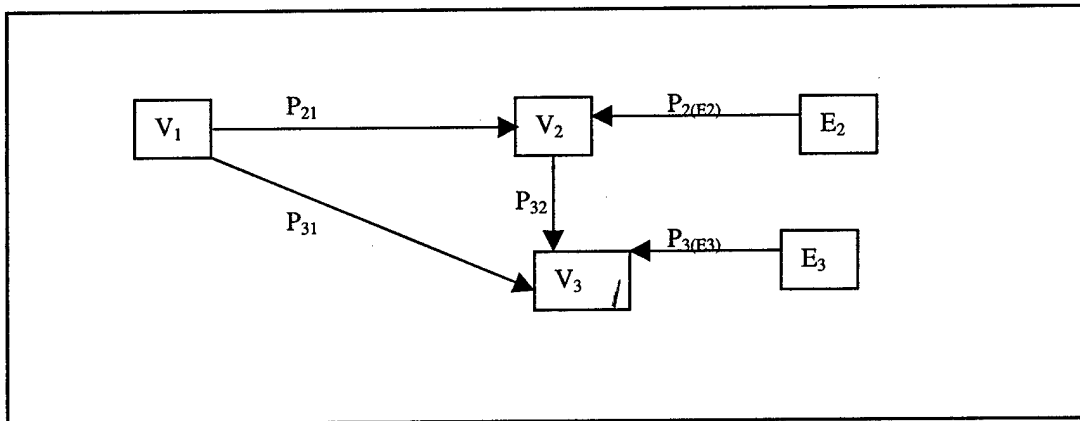


Figure 2. Example Path Diagram

Path models are made up of combinations of exogenous and endogenous variables. Exogenous variables are directly measured variables whose variation is assumed to be independent of the model. In the example shown in Figure 2, V_1 is an exogenous variable. Endogenous variables are variables whose variance is explained by exogenous or other endogenous variables within the model. In Figure 2, V_2 and V_3 are both endogenous variables. That is, V_2 is affected by V_1 , and V_3 is affected by both V_1 and V_2 . Because it is never statistically possible to account for the total variance of a variable, residuals are introduced to represent effects of variables not included in the model (Bentler, 1995: 55). In Figure 2, E_2 and E_3 represent these residual variables.

Each variable is then taken to be in standard statistical form, meaning that if V_i is the i^{th} variable as measured, then $X_i = [(V_i - \text{mean}(V_i)) / (\sigma_{V_i})]$. The same holds true for the residual terms. Thus, the variables shown in Figure 2 can be used to form a system of regression equations:

$$\begin{aligned}V_3 &= P_{32} * V_2 + P_{31} * V_1 + P_{3(E3)} * E_3 \\V_2 &= P_{21} * V_1 + P_{2(E2)} * E_2 \\V_1 &= V_1 \text{ (measured directly)}\end{aligned}$$

Note that path coefficient notation is very similar to that of regular regression coefficients. The order of subscripts is important. The first subscript identifies the dependent variable, the second the variable whose direct effect on the dependent variable is measured by the path coefficient (Duncan, 1966: 3). Once these relationships are quantified, the researcher can then attempt to interpret how accurately the hypothesized model represents reality.

The statistical package used in this thesis was EQS. Once the model was drawn, EQS automatically calculated a covariance matrix from the raw data of the variables in the model. Next, path equations were created and analyzed, producing path coefficients, summary statistics, and goodness of fit estimates. EQS is set up in such a way that researchers do not have to spend massive amounts of time becoming path analysis experts; rather they can spend their time analyzing their data, designing, and refining their models. For a more detailed presentation on EQS and path analysis theory, refer to the EQS Structural Equations Program Model, written by Peter M. Bentler (1995), the creator of EQS.

Summary

This chapter presented the theoretical foundation for the items used to measure job satisfaction, perceptions of outsourcing, and career intentions. A factor analysis was conducted to determine common loadings among survey items, and variables were combined accordingly. In addition, the chapter presented historical and calculated

reliability estimates, and described the way that the variables were combined for use in the model to test the research hypotheses. Finally, the chapter ended with a brief discussion of path analysis, the primary statistical instrument used to analyze the data.

IV. Analysis

This chapter evaluates the research hypotheses using the survey data. First, the descriptive statistics for the variables included in the model are presented. Second, hierarchical regression was performed to validate the theorized relationship between job satisfaction and turnover intentions. Third, path analysis was conducted to validate the hypothesized model of the influence of outsourcing on job satisfaction and the intent to quit. Finally, the chapter concludes by evaluating the research hypotheses.

Descriptive Statistics

The descriptive statistics and correlations among the variables used in the analysis are summarized in Table 4 (reliability estimates for the scales are included along the diagonal when appropriate). Descriptive statistics for each survey item are included in Appendix B.

Table 4. Descriptive Statistics and Variable Correlations

Variable	<i>Descriptives</i>		<i>Pearson Correlations</i>					
	Mean	SD	1	2	3	4	5	6
1. Intent to quit	3.10	1.25	--					
2. Job Satisfaction	3.59	.84	-.32**	(.86)				
3. Perception of outsourcing	2.58	.68	-.05	.11*	(.79)			
4. Direct influence of outsourcing on intent	3.49	1.10	.11*	-.02	-.51**	--		
5. Pay Satisfaction	3.71	.85	-.13**	.23**	.03	-.09	(.81)	
6. Knowledge of outsourcing	3.56	1.05	.04	.06	-.06	-.05	.04	--
7. Time in service	5.18	3.51	-.40**	.07	.01	-.19**	-.03	.04
<i>Note. n = 469, *p < .05 **p < .01 (Reliability estimates shown in parenthesis along the diagonal)</i>								

The correlation values were useful for establishing initial confirmation of the research hypotheses, which are evaluated in detail in a later section. The correlation values showed that the assumed direction of influence was correct for each hypothesis; all hypothesized positive relationships had positive correlations and all hypothesized negative relationships had negative correlations. For instance, the correlation between job satisfaction and intent to quit was $-.32$ ($p < .01$). Additionally, the hypothesized relationships between time in service and intent to quit and between perception of outsourcing and job satisfaction had correlations that were statistically significant ($p < .05$), which indicated potential for the hypotheses to be supported. The regression and path analysis builds on these findings.

Similarly, the mean values shown in Table 4 provided clues as to the answer to the research question. The mean value for the perception of outsourcing was 2.58, which indicated that the respondents viewed outsourcing in a negative light. The mean value for intent to quit was 3.10, which slightly indicated that they intended to separate from active duty. Further analysis is required to quantify causality among the hypothesized relationships.

Regression of Job Satisfaction—Intent Relationship

The first step in analyzing the hypothesized relationships was to validate the link between job satisfaction and employee turnover intentions. As previously indicated in Figure 1, the relationship between job satisfaction and turnover intention is subject to the controlling variables major command (MAJCOM), time spent on active duty (in years),

and active duty rank. Hierarchical linear regression was performed on the following proposed regression equation:

$$\text{Intent} = a_0 + a_1 * (\text{Time in service}) + a_x * \text{MAJCOM} + a_2 * \text{Paysat} + a_3 * \text{Jobsat}$$

To perform the regression, the respondents' major commands were transformed into categorical variables. There were fewer than 10 respondents from the Air Force Personnel Center, U.S. Air Force Academy, and the Air Force Special Operations Command, so they were recategorized into the "OTHER" category. After making these combinations, seven dummy variables remained and were entered into the regression. These variables can be thought of as X1 through X7. Air Combat Command (ACC) was the first major command represented. All X values were set equal to zero for ACC. Air Education and Training Command (AETC) was the second major command represented, and X1 was set equal to 1. X2 through X7 were set equal to zero for AETC. This operation was performed for each major command.

After coding the major command responses into a useable format, hierarchical regression was conducted on the equation shown above. The regression analysis is summarized in Table 5. As theorized, the regression analysis supported the idea that job satisfaction and time in service are strong influences on turnover intentions.

Table 5. Hierarchical Regression Analysis of the Dependent Variable Intent to Quit by Job Satisfaction, Pay Satisfaction, and Time in Service

<i>Steps and Procedure</i>	<i>Standardized β Coefficients</i>	<i>R²</i>	<i>ΔR^2</i>
Step 1			
Time in Service	-.39	.15	--
Step 2			
Job Satisfaction	-.29	.24	.09*
Step 3			
Pay Satisfaction	-.09	.24	0
* $p < .01$			

None of the major command variables (X1 through X7) appear in Table 5. These terms were not included because the regression analysis showed them to be statistically insignificant. A complete presentation of the regression results is provided in Appendix B. The coefficient of multiple determination (R^2) value for the job satisfaction and time in service influences on turnover intention was 0.24 ($p < .01$). This indicated that 24% of the variance in an individual's intent to quit is explained by the variables included.

Path Analysis

Test of Assumptions. Before the path analyses were run, the assumptions of the method were tested. Specifically, path analysis assumes multi-variable normality. A kurtosis analysis was conducted in order to establish the validity of normality assumptions and any subsequent estimators such as maximum likelihood and generalized least squares. Kurtosis is an estimate of the flatness or peak of the distribution, as well as the overall tendency toward a long tail at either end. The kurtosis is limited by its skewness, and can range from negative two to infinity. A perfectly normal distribution has a kurtosis of zero. In most cases kurtosis will fall between plus and minus two. The

normality correction factor for samples with large sample size is very near 1.0, so kurtosis values between plus and minus two can be ignored (Lindman, 1992: 22). Previous research has shown that for most cases, non-zero kurtosis can be ignored in studies with large sample sizes. The kurtosis was calculated for each model variable. All kurtosis values fell within the acceptable range of ± 2 .

Multivariate normality was also examined by looking at Mardia's coefficient (Hoyle, 1995: 63) was examined to validate multivariate normality. The EQS provided estimate for the Mardia's coefficient was 5.96. Further examination revealed that 70.3% of this value was a direct result of the influence of time in service, a variable for which normality was not of critical concern. In general, the lower the value of this coefficient, the better (Bentler, 1995: 85).

The Model. Next, path analysis was used to validate the remaining portions of the hypothesized model. The path model was developed from the original model of job satisfaction and intent to quit that was presented in Chapter 1. Several "runs" of the initial model were conducted, and Figure 3 is the final "best fit" path analysis model. The initial model obtained a fit index of .92. Based on these results, the model was refined by removing statistically insignificant variables and relationships. Fit indices improved and the model was assumed to be adequate for the purpose of this research. The final model is shown in figure 3, along with the standardized path coefficients.

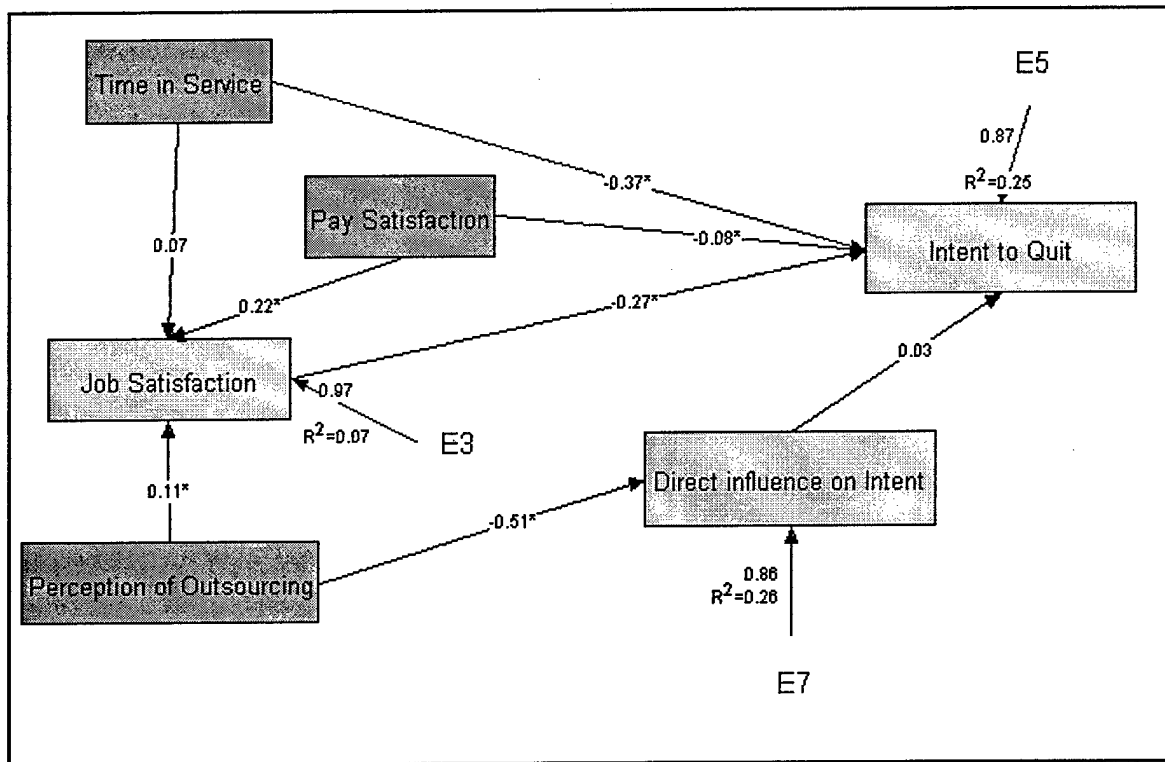


Figure 3. Path Analysis Model of Perception of Outsourcing, Job Satisfaction, and Turnover Intention

The standardized path coefficients shown in Figure 3 were produced using EQS for Windows, version 5.7 (Bentler, 1995). As previously discussed, these standardized path coefficients can be used to form a system of regression equations for each variable. The system of equations that was produced by EQS is shown in Table 6, along with variance estimates for each variable. Note that no equation is required for time in service, pay satisfaction, or perception of outsourcing because they were all directly-measured variables.

Table 6. Path Coefficient Equations

<i>Variable</i>	<i>Equations</i>	<i>R²</i>
Intent to quit	$-.37*(\text{Time in Service}) - .08*(\text{Pay Satisfaction}) - .27*(\text{Job Satisfaction}) + .87*E5$.25
Perception of outsourcing	Directly measured	n/a
Job Satisfaction	$.11*(\text{Perception of outsourcing}) + .07*(\text{Time in service}) + .22*(\text{Pay Satisfaction}) + .97*E3$.07
Pay Satisfaction	Directly measured	n/a
Direct influence of outsourcing on career intentions	$-.51*(\text{Perception of outsourcing}) + 0.86*E7$	0.26
Time in service	Directly measured	n/a

Path analysis is essentially a several-step multiple regression in which each variable is regressed against all those assumed to precede it in the model to be tested. Though it provides evidence that can support a causal model, it does not necessarily validate the model (Michaels and Spector, 1982: 55). The model is simply this author's representation of the situation. Note that the R^2 value was equal for .25 for intent to quit. This was a near match with the R^2 calculated in the preliminary regression model. One question that had to be answered was, "Why do path analysis at all if it doesn't explain additional variance?"

Path analysis has a number of advantages over regression in that causal relationships can be defined prior to the analysis. Thus, hypothesized relationships can be confirmed or discounted. Additionally, path analysis provides a means to directly compare how well each model fits the data. Path analysis added value to this study by indicating the strengths of the causal relationships between the other variables in the study. The relationship between time in service and job satisfaction, time in service and intent to quit, job satisfaction and intent to quit, perception of outsourcing and job satisfaction, and between perception of outsourcing and intent to quit were critical for

evaluating the research hypotheses. While this model did not provide additional insight into the variance associated with intent to quit, it is important to note that it did nothing to detract from the previously-established relationship.

Model Fit. EQS provided detailed summary information on goodness of fit. The first goodness of fit measure provided was the χ^2 associated with the model of independent or uncorrelated variables, with a value of 334.93. The χ^2 of the model the researcher proposed was 30.43. Bentler (1995) reported that it is essential for the χ^2 of the model of interest to be less than the χ^2 of the independence model. The model used in this study met these requirements. The next goodness of fit measures produced were Akaike's information criterion (AIC) and Bozdogan's consistent version (CAIC) of the same measure. The AIC value was 16.43 and the CAIC value was -19.67 for the model used in this study. These values were both lower than the AIC and CAIC values for the independence model, thus meeting Bentler's cutoff requirements.

In addition to the statistical information, the Bentler-Bonett normed fit index (NFI), the non-normed fit index (NNFI), and the comparative fit index (CFI) were produced. The NFI value was .91, the NNFI was .84, and the CFI was .93, all which were sufficient to assume an acceptable fit for the proposed model. Bentler reported that it is preferable to obtain as many adequate goodness of fit measures as possible (Bentler, 1995: 93). The model this study proposed certainly met that requirement. All of the goodness of fit measures for the proposed model were acceptable. The goodness of fit measures and their associated minimum values are summarized Table 7. For a detailed explanation of each fit measure, refer to the EQS Structural Equations Manual (Bentler, 1995: 93).

Table 7. Goodness of Fit Measures

<i>Model</i>	<i>Df</i>	χ^2	<i>AIC</i>	<i>CAIC</i>	<i>NFI</i>	<i>NNFI</i>	<i>CFI</i>
Independence Model	15	334.93	304.92	227.67	n/a	n/a	n/a
Proposed Model	7	30.43	16.43	-19.62	.91	.84	.93
Cut-off requirement**	n/a	N/a	Lesser*	Lesser*	.90**	n/a**	.90**
*Lesser AIC and CAIC score indicates potentially useful model							
**(Bentler, 1995)							

As evidenced by Table 7, the proposed model did in fact fit the data well. The path analysis was consistent with the notion that various personal and organizational factors combine to influence job satisfaction and turnover intention. Based on these goodness of fit measures, the researcher assumed the model to be useful for evaluating the research question and hypotheses.

Hypothesis Evaluation

After determining the usefulness of the proposed model, the final step was to evaluate the research hypotheses. The hypotheses were evaluated by examining the relationships identified by path analysis. Particular attention was paid to appropriate statistical significance between variables. The results of the hypothesis evaluation are summarized in Table 8.

Table 8. Hypothesis Evaluation

<i>Hypothesis</i>	<i>Supported?</i>	<i>Method</i>
H ₁ : A positive, statistically significant relationship exists between the perceptions of outsourcing and job satisfaction	Yes	Regression, Path Model
H ₂ : A negative, statistically significant relationship exists between job satisfaction and turnover intentions	Yes	Path Model
H ₃ : A negative, statistically significant relationship exists between perceptions of outsourcing and turnover intentions	No	Path Model
H ₄ : A negative, statistically significant relationship exists between the controlling factors and turnover intentions	Yes	Path Model
H ₅ : A positive, statistically significant relationship exists Between the controlling factors and job satisfaction	No	Path Model

The path model was used to test each of the research hypotheses. H_1 was written as follows: A positive, statistically significant relationship exists between the perceptions of outsourcing and job satisfaction. This hypothesis evaluation made use of the variables perception of outsourcing and job satisfaction. From the path model (Figure 3), the standardized path coefficient between perception of outsourcing and job satisfaction was equal to .13, and was statistically significant ($p < .05$). Additionally, this relationship was confirmed in the regression that established initial validation of this theory.

H_2 was written as follows: A negative, statistically significant relationship exists between job satisfaction and turnover intentions. From the path model (Figure 3), one can see that the standardized path coefficient between job satisfaction and intent to quit is equal to a statistically significant value of $-.27$ ($p < .05$). This relationship was also confirmed through regression analysis; however the path model provides a more powerful tool for assessing causality within the entire system. This analysis confirmed the second research hypothesis.

The third research hypothesis evaluated was represented by the link between the perception of outsourcing and turnover intentions. In order to evaluate this hypothesis, both path analysis and regression were employed. The analysis focused on the perception of outsourcing and the direct influence of outsourcing on career intentions. The link between perception of outsourcing and the direct influence of outsourcing on career intentions was statistically significant ($p < .05$), with a standardized path coefficient value of $-.51$. Thus, the respondents did feel to some degree that outsourcing has caused them to reconsider their career intentions. The link between the direct influence of outsourcing on career intentions and actual intent to quit, however, was shown to be statistically

insignificant, and was eliminated from the model. Therefore, although outsourcing has caused Air Force Civil Engineer CGOs to rethink their career intentions, it has not significantly influenced their turnover intentions to the extent that this researcher hypothesized. Similarly, the final model did not include a direct link directly from perception of outsourcing to intent to quit. In the initial model (Appendix B), this link was shown to be statistically insignificant ($p > .05$) and was removed. These observations from the path analysis combined to discredit the third hypothesis.

The path model was also used to test the fourth hypothesis. H_4 was written as follows: A negative, statistically significant relationship exists between the controlling factors and turnover intentions. Previous regression analysis revealed that the major commands to which the respondents were assigned were not of statistical significance. Time in service, however, did prove to be significant. The standardized path coefficient for this relationship was equal to $-.37$ ($p < .05$), which matched the individual regression coefficient of -0.13 . Thus, the fourth hypothesis was supported.

The fifth hypothesis was the link between the controlling factors job satisfaction. H_5 was written as follows: A positive, statistically significant relationship exists between the controlling factors and job satisfaction. From the path model, this relationship was not statistically significant ($p > .05$), and therefore this hypothesis was not supported for this particular data set.

Summary

This chapter employed regression functions and the method of path analysis to examine the research hypotheses. Three of the five hypotheses were confirmed, while

two were discounted. These findings supported the notion that job satisfaction influences turnover intentions, and that there is an overall negative perception of outsourcing among Air Force Civil Engineer CGOs. The value of these findings, as well as other implications, will be discussed in detail in the following chapter.

V. Conclusions

This chapter concludes this research effort by first revealing a final answer to the research question. Second, it identifies areas of concern for Air Force Civil Engineer leaders, and uses the data to suggest possible courses of action. Third, it compares the results of this research effort to the results of similar research found in the literature. Fourth, possible limitations of this study are identified and recommendations for future research are suggested. Finally, the author's findings are summarized, and the project concludes with the author's final comments.

Research Questions

One goal of this research effort was to answer the following question: What are the perceptions of outsourcing among Air Force Civil Engineer CGOs and how do they feel it will influence their job satisfaction and turnover intentions? The research hypotheses, discussed in the previous chapter, provided one answer to this question.

Perceptions of Outsourcing. The data showed that most Civil Engineer CGOs felt that outsourcing will have a negative impact on the Civil Engineer career field. This research indicated that a positive, statistically significant relationship exists between the perception of outsourcing and job satisfaction. It also indicated a negative, statistically significant relationship existed between job satisfaction and turnover intention. These findings can then be combined to provide the following answer to the research question: In general, Air Force Civil Engineer CGOs have negative perceptions of outsourcing and feel that it will negatively influence their job satisfaction, which will then in turn influence their turnover intentions.

Air Force Implications

These findings reveal a number of issues that should be considered by leaders in the Air Force Civil Engineer community. The first issue addressed is the idea of outsourcing education. The Air Force is “stuck” with outsourcing for the foreseeable future, so efforts must be made to ensure that the affected personnel fully understand the program and its ramifications. This research attempted to represent the feelings of the entire population of CGOs. As an aside, the responses of the 311 respondents who said that they understood outsourcing were analyzed independently, and the results supported the notion that a broad understanding of outsourcing is necessary if the organization is to alleviate its negative impacts.

A brief analysis of the relationship between the 311 “knowledgeable” respondents’ perception of outsourcing and job satisfaction failed to yield the same statistically significant relationship as the analysis of the entire sample. Obviously, those officers who considered themselves educated on outsourcing issues did not view it as negatively as did the other participants in the sample. The obvious course of action for Air Force Civil Engineer leaders would be to go to greater lengths to educate CGOs on outsourcing issues. Broader understanding of outsourcing issues would then in turn lead to higher satisfaction levels among those officers exposed to outsourcing.

A second issue that should be considered is retention. The Air Force goes to great lengths to train capable, combat-ready officers. Yet somewhere along the way they are being driven out of the service. One third of the participants in this study did not plan on making a career of military service. A second third of the participants were undecided as

to their career intentions, and the final third thought that they will remain in the service until retirement.

Civil Engineer leaders should use this data in some way to foster an environment that will encourage those that are undecided to decide to stay on active duty. Efforts should be made to address the concerns of the individuals that have decided to separate from the Air Force. This research indicated that although outsourcing was not a direct contributor, it does indirectly contribute to turnover through its relationship with job satisfaction.

A third aspect of this study that should be considered by Civil Engineer leaders when making policy decisions is job satisfaction and its link to retention. Overall, the respondents reported that they are somewhat satisfied with their current jobs. This study showed that higher levels of job satisfaction lead to lower turnover intentions; from this data, it seems obvious that Civil Engineer leadership should make efforts to maintain positive job satisfaction among Air Force Civil Engineer CGOs. Additionally, they must take caution when instituting major changes, such as outsourcing; this and previous research showed that such changes adversely affect the organization by lowering job satisfaction.

Link to Literature

The primary relationships evaluated by this research effort were the relationships between major organizational changes (outsourcing), job satisfaction and turnover intentions. The model used to evaluate this author's research hypotheses was based on Spector's model presented in his 1997 book. As outlined in chapter 4, this research

confirmed the relationship that Spector (1997: 63) theorized to exist between job satisfaction and turnover intentions. Basset (1994: 62) reported that the correlations between satisfaction and turnover rates are usually modest at best, and noted that considerable variance remained unexplained. This study yielded similar results; job satisfaction explained 11% of the variance in the turnover intention variable. When combined with time in service, 25% of the variance was explained.

Turnover is the result of many factors other than satisfaction. Economic conditions often play pivotal roles (Basset, 1994: 62), and unemployment rates and job availability are strong influences (Spector, 1997: 63). Nevertheless, employee job satisfaction did explain a significant amount of the variance in intent to quit for the data used in this study, and cannot be ignored. Dissatisfaction is consistently associated with higher levels of turnover, usually due to a desire to “escape” from unpleasant work conditions (Basset, 1994: 62).

A second relationship this study confirmed was the relationship between a major organizational change and job satisfaction. The participants in this research project were asked a series of questions that assessed their perceptions of outsourcing, a major change from the “normal” way of doing business for their particular career field. The results supported the hypothesis that a positive relationship exists between Air Force Civil Engineer CGOs’ perception of outsourcing and their turnover intentions. Thus, low satisfaction associated with outsourcing may lead to decreased levels of job satisfactions. Managers who are faced with major organizational changes should take precautions to ensure that the changes don’t produce similar side-effects in their organizations.

Models such as the one used in this study can provide useful insight to managers who are considering the implementation of outsourcing or other major organizational changes. The relationship between organizational change (in this case outsourcing) and job satisfaction is important for managers who are part of organizations that are undergoing or that are planning on undergoing major changes. The relationship between job satisfaction and turnover intentions is important for managers who are part of organizations that either have turnover problems or that want to avoid turnover problems.

Limitations

This study was partially limited because it did not address the issues of perceived organizational support and commitment, two issues that are commonly associated with satisfaction studies. Had the model included these two variables, a greater amount of the variance associated with turnover intentions might have been identified.

A second limitation of this study was that the study may have been influenced by method variance. That is, all variables were assessed at the same time with a single questionnaire. However, by definition, method variance should similarly inflate relationships among all variables assessed in the same questionnaire, so that the difference between relationships ought to remain unaffected (Campbell and Fiske, 1959). Still, the amount of time allowed to complete this project prevented the researcher from conducting a more effective longitudinal study. Future researchers could benefit from applying this model and lessons learned here, and conducting similar research by using a longitudinal method.

A third limitation of this study is centered on the idea of measuring a perceived variable. Many of the participants surveyed have worked with outsourcing in the past, and therefore hold educated opinions on the issue. The opinions of those participants in the study who know little or nothing about outsourcing may change once they have the opportunity to work with it. Conversely, this could actually be viewed as a strength as well. If a person has negative perceptions of a given idea because of bad (or lack of) information he or she has received, value is added by identifying to leadership the need for additional education on the issue.

Future Research

There are several ways that this topic could be expanded in future research efforts. First, additional research could be conducted by incorporating the issues of perceived organizational support and employee organizational commitment into this model. Both of these issues have been linked to turnover by various authors in the past, including Spector (1997).

Secondly, additional research could be conducted by examining actual turnover data. This could be done in a number of ways. Standard exit surveys are often completed as service members separate from active duty service. Future researchers could possibly obtain such data from the Air Force Personnel Center. A second way of obtaining such data would be to actually mail a customized survey to individuals who have already separated.

Finally, a future researcher could focus on other side-effects of outsourcing. One common comment among survey respondents was the fear that outsourcing will reduce

our wartime readiness, which is directly opposite of its intended purpose. Individuals at all levels in the organization could be interviewed in a pilot study to identify specific concerns. A follow up study could then be conducted to validate those concerns and their resulting hypotheses.

Summary of Findings

These findings are clearly applicable to both the Air Force Civil Engineer career field and the Air Force community as a whole. Job satisfaction has consistently been shown to be an indicator of imminent employee turnover (Basset, 1994: 63). Considering the retention and recruiting problems that the Air Force is facing today, the findings of this study cannot be ignored.

In 1999, for the first time ever, all branches of the military failed to meet recruiting goals. If for no other reason, Air Force leaders should heed the warning that lies hidden within this data. Air Force Civil Engineer CGOs are uncomfortable with the pending changes that will result from outsourcing initiatives, and anticipate lower job satisfaction. Only a sound educational process and proactive leadership will counteract the fear of the unknown that most Air Force Civil Engineer CGOs associate with outsourcing. Ineffective recruiting efforts have made the retention of current, qualified officers more critical than ever.

Outsourcing. As mentioned above, outsourcing is a major change of business that the Air Force Civil Engineer community has embraced and is currently implementing. This research indicates that current and future leaders would be wise to consider some of the "people implications," such as job satisfaction and retention when embarking on the

outsourcing voyage. Although the reported understanding of outsourcing among the individuals surveyed was slightly positive, there is always a need for additional education and dissemination of current information, regulations, and decisions from leadership to the troops in the trenches. Although this variable did not directly play a statistically significant role in the analysis, a deeper understanding of outsourcing, particularly of its benefits, could lead to a decreased influence of outsourcing on job satisfaction.

Conversely, additional information could push the undecided individuals over the edge, and cause them to actually become more dissatisfied. Whatever they conclude from this information, Air Force Civil Engineer leaders cannot ignore this indication that their CGOs do not fully understand the official outsourcing policy. Regardless of how outsourcing is perceived, it is here to stay; Air Force Civil Engineer CGOs need to be knowledgeable on the subject if they are to manage it in the future.

Individual concerns. In addition to the constructs directly measured by the individual survey items, respondents were encouraged to write in additional comments. Some concerns were common. Many respondents said that they thought that outsourcing was being implementing incorrectly. Many thought that outsourcing is the type of issue that is always the “correct” answer, and that even if the military option works out to be the most cost effective method, the bases would be forced to reassess the situation continually until the contractor won out.

Many respondents appeared concerned with the amount of time spent deployed overseas and assigned to remote locations. The prevalent feeling was that a decrease in the number of stateside assignments would force the remaining active duty military personnel to spend more of their careers overseas.

Finally, many of the survey respondents reported that they were disillusioned with the idea of serving as a quality assurance representative on an outsourcing contract. They stated that they enjoyed their job of bygone years, and that the outsourced version is unappealing to them.

These are certainly not all-inclusive of the issues raised by the respondents who took the time to write in comments. A detailed presentation of their comments is provided in Appendix C.

Final Comments

In general, Air Force Civil Engineer CGOs expressed a positive level of current job satisfaction. They did, however, report that they anticipate lower job satisfaction as outsourcing becomes more widely implemented. Correlational and regression analysis confirmed the relationship between job satisfaction and turnover intention, and the relationship between the perceived influence of outsourcing and job satisfaction. These relationships are worth considerations as future decisions are made concerning the implementation of outsourcing.

In conclusion, this research suggests that Air Force Civil Engineer CGOs are aware of the official outsourcing policy, and that they feel that it will have an overall negative influence on their careers and the career field in general. Therefore, Air Force Civil Engineer leadership should consider devoting additional resources to educate junior officers as to the importance of outsourcing and its anticipated benefits. Nearly all of the individual comments reflected the common "bad" side of outsourcing. Very few reflected the "good" side. Additional education and commander involvement will be

required if these trends are to be reversed. Air Force Civil Engineer CGOs are not unwilling to accept the changes that are inevitable in a military career; they just want to be informed about them so that they can form educated opinions and make the best decisions for their individual situations.

Appendix A

Survey Package



DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (AETC)

3 Oct 99

MEMORANDUM FOR CIVIL ENGINEER CGOs

FROM: AFIT/ENV

Subject: CES CGO Job Satisfaction Survey

1. Printed on the back of this memo is a survey that is part of a research study on feelings of Air Force Civil Engineer CGOs for job satisfaction and outsourcing. The work is being conducted by the Air Force Institute of Technology's Engineering and Environmental Management Department.
2. The researcher will use the information to draw conclusions on personnel issues such as satisfaction and retention, and to make recommendations to Civil Engineer leaders. This research is purely academic in nature. All Air Force Civil Engineer CGOs received this survey. In order for the results to truly represent the thinking of the entire survey population, it is important that each survey be returned. If, due to PCS, the intended recipient is unable to complete this survey, please return it to me blank, or, if you are a CE CGO and have replaced the intended recipient, please fill it out yourself.
3. If there are any questions on the survey that you do not understand or do not wish to answer, simply skip over it and proceed on to the next question. This survey is set up to assure complete anonymity, and it is impossible to distinguish between individual responses. Additionally, if you have any general comments, please make them in the "empty" space at the bottom of this memo, or simply attach them on a separate sheet of paper.
4. This survey will be performed IAW AFI 36-2601. If you have any questions concerning this survey, please contact me at jkennedy@afit.af.mil, or my research advisor Major Mark Ward at DSN 785-2998. Your assistance is greatly appreciated and will help us understand a little more about the relationship between outsourcing, job satisfaction, and retention intentions.

JAMES F. KENNEDY, Capt, USAF
AFIT MS Candidate

This survey contains 21 questions to be answered by filling in the appropriate spaces directly on the survey itself or by writing a response in the space provided. Feel free to make any additional comments on the back of this form after completing the survey.

Questions 1 through are used to determine the demographics of survey participants. Simply fill in your answer in the spaces provided.

1. What is your current active duty grade?

2. How long have you been on active duty in the Air Force? Years and months

3. To which MAJCOM are you currently assigned?

- ☐ ACC ☐ AFMC ☐ PACAF ☐ USAFA ☐ AFSOC
☐ AMC ☐ AETC ☐ USAFE ☐ AFPC ☐ OTHER

Questions 4 through 21 are designed to assess your satisfaction as an Air Force officer, and your impressions of outsourcing. These questions use a five-point rating system to scale your responses. Mark the circle that corresponds to the selection that best describes the way you feel about each issue.

	① Strongly Disagree	② Disagree	③ Neither Agree nor Disagree	④ Agree	⑤ Strongly Agree
4. I am satisfied with my current ability to maintain an acceptable standard of living.	①	②	③	④	⑤
5. I am satisfied with my current economic security.	①	②	③	④	⑤
6. I am satisfied that the work that I do is important to the USAF mission.	①	②	③	④	⑤
7. I am satisfied that my current job is challenging.	①	②	③	④	⑤
8. I am satisfied that my current job is rewarding.	①	②	③	④	⑤
9. My current job holds responsibility commensurate with my time in service.	①	②	③	④	⑤
10. My current job is preparing me for future positions of greater responsibility.	①	②	③	④	⑤
11. I am satisfied that the work that I currently do as a USAF Civil Engineer prepares me for a second career as a civilian engineer.	①	②	③	④	⑤
12. I am aware of the official USAF Civil Engineer policy concerning outsourcing as the concept applies to Base Civil Engineer function.	①	②	③	④	⑤
13. Outsourcing civil engineer functions will negatively influence my role as a USAF Civil Engineer officer.	①	②	③	④	⑤
14. After outsourcing has been implemented in the Civil Engineer career field, I feel my job will be challenging.	①	②	③	④	⑤
15. After outsourcing has been implemented in the Civil Engineer career field, I feel my job will be rewarding.	①	②	③	④	⑤
16. After outsourcing has been implemented in the Civil Engineer career field, I feel my job will prepare me for a second career as a civilian engineer.	①	②	③	④	⑤
17. I feel that my job will hold responsibility commensurate with my time in service after outsourcing has been implemented.	①	②	③	④	⑤
18. After outsourcing has been implemented in the Civil Engineer career field, I feel that my future promotion opportunities will be negatively influenced.	①	②	③	④	⑤
19. I plan to serve in the USAF until retirement.	①	②	③	④	⑤
20. As outsourcing becomes widely implemented, I am re-thinking my career intentions.	①	②	③	④	⑤
21. As outsourcing becomes widely implemented, I feel that the Civil Engineer career field will be negatively impacted.	①	②	③	④	⑤

Appendix B

Survey Data

This appendix contains the survey demographics, frequency of response tables for each item, detailed descriptive statistics, and the analyses performed in the hypothesis evaluation procedure.

Demographics

The surveys were mailed to 865 of 955 Civil Engineer CGOs. Twenty-eight surveys were returned due to insufficient address, permanent change of station, or other reasons, further reducing the number of individuals who received the surveys to 837. Of these, 469 completed and returned the surveys, a 56% response rate. Table B-1 outlines the response by grade, major command, and time in service. Note that there is no evident response bias by grade.

Table B-1. Demographics

<i>Grade</i>	<i>Received Survey</i>	<i>Returned Survey</i>	<i>Sample %</i>	<i>Population %</i>
Second Lieutenant	199	88	18.8	24
First Lieutenant	173	114	24.4	21
Captain	465	267	56.7	56
<i>Major Command or Unit of Assignment</i>				
ACC : 117	AETC: 77	AFMC: 56	AFPC: 2	
AFSOC: 4	AFSPC: 20	AMC: 49	PACAF: 57	
USAFA: 7	USAFE: 32	OTHER: 48		
<i>Time in Service</i>				
1-2 years: 88	5-6 years: 39	8-9 years: 16	11-12 years: 3	
2-4 years: 114	6-7 years: 41	9-10 years: 20	12-13 years: 0	
4-5 years: 54	7-8 years: 33	10-11 years: 55	>12 years: 6	

Frequency Table

Table B-2 contains the frequency of response for each item. These frequencies are for the actual survey data; some of the items were reverse-scaled for use in the model. For the exact survey items, refer to Appendix A.

Table B-2. Response Frequencies

	SURVEY ITEM	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
<i>Job Satisfaction</i>						
4	Economic standard of living	9	52	38	297	73
5	Economic security	8	73	67	262	59
6	Job is important to USAF mission	14	63	96	218	78
7	Job is challenging	20	50	71	227	101
8	Job is rewarding	33	94	103	178	61
9	Job holds responsibility commensurate with time in service	22	68	82	231	66
10	Job is preparing me for future positions of greater responsibility	16	40	82	221	110
11	job prepares me for a second career as a civilian engineer	95	150	86	112	26
12	I am aware of outsourcing policy	17	82	59	242	69
<i>Perception of Outsourcing</i>						
13	Negatively influence role as CE officer	11	69	94	194	101
14	Job will be challenging (after outsourcing)	35	91	170	138	35
15	Job will be rewarding (after outsourcing)	58	149	191	65	6
16	My job will prepare me for a future job as a civilian engineer (after outsourcing)	96	131	169	65	8
17	Job will hold responsibility commensurate with time in service (after outsourcing)	46	118	219	81	5
18	Promotion opportunities will be negatively influenced by outsourcing	12	79	153	160	65
19	I plan to serve in the USAF until retirement	95	61	157	109	47
20	Outsourcing is causing me to rethink my career intentions	26	64	118	176	85
21	Outsourcing will negatively influence the Civil Engineer career field	3	47	87	181	151

Descriptive Statistics

Table B-3 contains the detailed descriptive statistics for each survey item, and the inter-item Pearson correlation coefficients. Survey items 13, 18, 19, and 21 were reverse-scaled as positively-worded items so that they would be consistent with the other items.

Table B-3. Descriptive Statistics

Job Satisfaction										
Survey Item	4	5	6	7	8	9	10	11		
Mean	3.80	3.62	3.60	3.72	3.30	3.54	3.79	2.62		
SD	.90	.95	1.01	1.05	1.14	1.05	1.01	1.21		
Outsourcing and Turnover Intention										
Survey Item	12	13	14	15	16	17	18	19	20	21
Mean	3.56	2.35	3.10	2.60	2.48	2.75	2.60	3.10	3.49	2.08
SD	1.05	1.05	1.04	0.92	1.02	0.89	1.00	1.25	1.10	0.98
Pearson Correlations										
ITEM #	4	5	6	7	8	9	10	11	12	
5	*.69	--								
6	*.20	*.20	--							
7	*.16	*.61	*.61	--						
8	*.19	*.17	*.61	*.67	--					
9	*.16	*.18	*.40	*.49	*.51	--				
10	*.11	*.12	*.48	*.54	*.55	*.59	--			
11	*.15	*.20	*.29	*.31	*.31	*.25	*.26	--		
12	0	.07	.07	0	.03	.07	.06	-.01	--	
13	.05	.02	0	.03	-.03	0	-.03	0	-.01	
14	-.01	.03	*.10	*.21	*.14	*.10	*.11	*.11	.04	
15	.08	.01	*.16	*.21	*.23	*.12	*.14	*.10	-.06	
16	.07	.03	.04	.08	.07	.08	-.01	*.45	-.6	
17	-.01	.02	.06	*.09	.07	*.15	.05	*.10	-.06	
18	.02	.04	.03	-.01	-.01	.04	.04	.08	-.06	
19	*.13	*.11	*.31	-.27	*.38	*.13	*.16	*.16	-.07	
20	-.06	*.09	-.08	-.02	.03	-.01	-.01	-.01	.05	
21	.03	-.01	.01	.01	-.02	-.06	0	.05	*.11	
Knowledge, Perceived Influence of Outsourcing, and Retention										
ITEM #	13	14	15	16	17	18	19	20	21	
13	--									
14	*.24	--								
15	*.43	*.46	--							
16	*.21	*.35	*.37	--						
17	*.37	*.37	*.53	*.37	--					
18	*.40	*.16	*.30	*.21	*.36	--				
19	0	*.11	*.15	*.12	.04	.04	--			
20	*.41	*.18	*.33	*.20	*.32	*.37	*.11	--		
21	*.59	*.23	*.48	*.31	*.43	*.46	-.02	*.51	--	
*p < 0.05										

Analyses Performed

Regression of Intent. One of the major theories of this research was the influence of job satisfaction on turnover intention, further influenced by the controlling variables major command (MAJCOM), time spent on active duty (in years), and active duty rank. In order to establish these relationships, simple and then hierarchical regressions were conducted. As reported in Chapter 4, none of the major commands made statistically significant contributions to the respondents' intent to quit—which should be viewed by commanders as a favorable thing. Table B-4 summarizes the results of the regression of intent by job satisfaction, pay satisfaction, time in service, and major command of assignment. The R^2 for this model was .26, with an F statistic of 15.79 (significant at 0.001).

Table B-4. Regression of Intent to Quit by Job Satisfaction,
Time in Service, and Major Command of Assignment

	Coefficients	t	p
INTERCEPT	5.61	18.16	0*
Time in Years	-.14	-9.18	0*
Pay Satisfaction	-.12	-1.88	.06
Job Satisfaction	-.40	-6.44	0*
AETC	.01	.07	.95
AFMC	.22	1.25	.22
AFSPC	-.15	-.57	.57
AMC	.25	1.32	.19
OTHER	.24	1.33	.19
PACAF	-.05	-.26	.80
USAFE	.06	-.27	.80
* $p < .01$			

Initial Path Analysis. An initial path analysis was performed using the model shown in Figure B-1. This model was constructed in the same “format” as the basic model that was presented in the first chapter (Figure 1). This path diagram includes all variables that were initially thought to be important in describing the theorized relationships. Path analysis revealed that they were in fact not statistically significant, and they were removed from the actual model that was used in the Analysis chapter (Chapter 4, Figure 3). The only variables that were included in the model used in chapter 4 were those that were statistically significant or that tied directly to a research hypothesis.

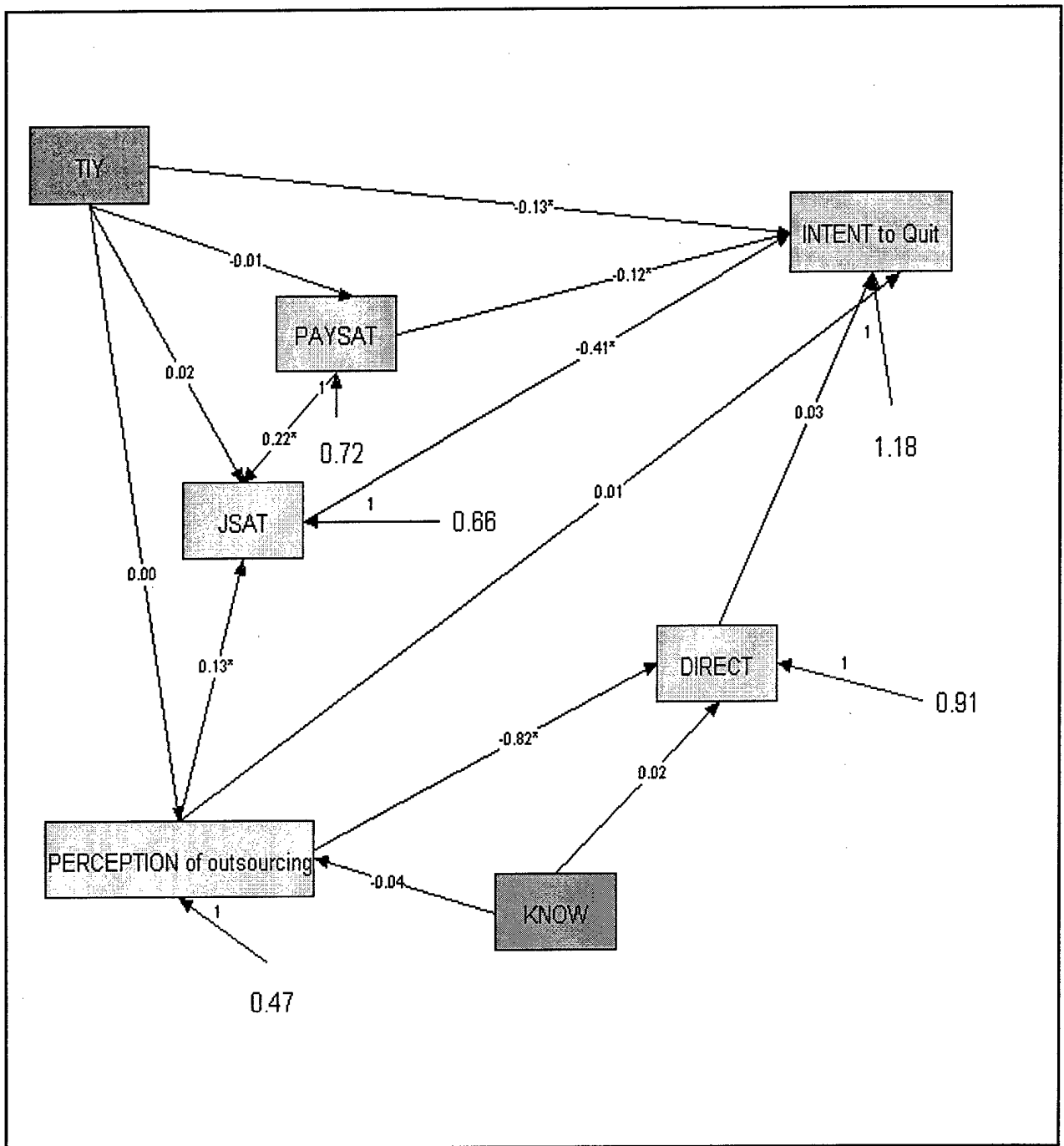


Figure B-1. Initial Path Analysis Model of Change, Satisfaction, and Turnover Intention

The path analysis conducted on the model shown in Figure B-1 produced goodness of fit measures that were above the minimum requirements, so the model was concluded to be sufficient to fit the data. Table B-5 summarizes the goodness of fit results from the path analysis of this initial model.

Table B-5. Goodness of Fit for Initial Path Analysis

<i>Model</i>	<i>Df</i>	χ^2	<i>AIC</i>	<i>CAIC</i>	<i>NFI</i>	<i>NNFI</i>	<i>CFI</i>
Independence Model	21	340.84	298.83	190.67	n/a	n/a	n/a
Proposed Model	8	33.89	17.89	-23.31	.91	.79	.92
Cut-off requirement	n/a	$p < .001$	Lesser*	Lesser*	.9	n/a	.9
<i>*Lesser AIC and CAIC score indicates potentially useful model</i>							

Primary Path Analysis. The model shown above in Figure B-1 was revised after removing some of the statistically insignificant relationships that had been initially proposed by this author. It is interesting to note that none of these relationships were proposed by Spector or any of the other researchers cited. Perhaps they had already confirmed the lack of such relationships.

A detailed presentation of the results of the path analysis of the revised model (Chapter 4, Figure 3) was presented in Chapter 4. Future researchers who wish to recreate this model should be able to use the inter-item correlations reported there and in this appendix to do so.

Appendix C

Survey Comments

This appendix contains individual comments written directly on the surveys by the survey respondents. These comments are identical, word-for-word as the respondents made them, with the only exception being the correction of spelling errors.

Lack of rewarding leadership experience has been the biggest disappointment. Lack of mission focus has been second to that. No adventure in the career field.

Why assume everyone's second career will be as a civilian engineer?

I believe the current CE leadership is doing the best "damage control" it can to minimize the hurt outsourcing is causing the career field. I thank them for that. But I think the pressure from outside CE (within USAF) and outside USAF (DoD and Congress) is simply too great. CE leadership will be forced to "roll" and offer many more positions in the years ahead. Once outsourcing becomes the norm in CE (I believe it will), we will cease to be qualified to call ourselves "Engineers," although we will probably be GREAT contract QAEs/Inspectors.

I do not plan on staying in the AF because in CE you do not get to be an engineer. An MBA could be a CE officer because all we get to do is manage the process.

A few words.....outsourcing is not necessarily a negative action. But, when you outsource, wing commanders need to understand that there will be a reduction in flexibility to accomplish taskings. Also, contracting must get larger and increase rank structure to support BCE, ILS, ILT, etc.

If CE is outsourced I have no idea what I'll be doing.

If I had a job in outsourcing or worked with contractors or civilians at an outsourced base I would be extremely dissatisfied.

Civil Engineering has been great as a young officer, but as someone who is truly interested in the technical side and wants to become, at least, a skilled engineer, there is no avenue. My current position, Construction Inspector, is a great learning experience but at my base, no military officer is given this opportunity (I was because I am leaving

the AF). Some people love management and enjoy immediate positions of that nature but to some of us, this is very frustrating (to be moved job to job learning a little about everything and a lot about nothing). Not really what I expected but I do understand that the officer career path is set up like this so that is life.

I see the negative impact as being the fact that more positions will be overseas (or at least a higher % of the positions) and at not very desirable locations. Judging from the number of people who 7 day opt when faced with a remote, I'd say retention will be a big problem. Even those of us who like going overseas will become disenchanted with the idea if forced to go too often.

As a 32E CGO that is currently assigned outside of the USAF CE career field, I have been out of the normal loop of current events. The information I usually get is from either friends at other bases or through magazine articles. Most of the news I do receive is sporadic in nature, especially since the CE Air Staff is no longer located at the Pentagon due to the renovation. I find it very difficult to reach FGOs who could provide me information on the current outsourcing status or be a mentor for future assignments. The other concern I have is the mixed message CGOs are getting on the current situation. In one instance, I am told we are desperately short of young FGOs and captains. In the next breath, I am told we are outsourcing a significant part of the CE community and large cutbacks are on the horizon. What is a mid-career officer to do with such mixed messages?

Any incentives (bonus, engineering pay, etc.) for CE officers would be most welcome to alleviate tight budgets (something most rated officers rarely experience).

Anticipated Ops tempo and outsourcing are major factors as to why I don't intend to serve until retirement.

I am aware of the official outsourcing policy but it seems unclear.

I am voluntarily separating within 6 months....one reason is due to the fact that the CE community is being outsourced/privatized.

Outsourcing will have the greatest negative impact on the civilians. As long as we have UTC taskings there will always be a need for CE officers in leadership positions. Being ready to deploy and support the flying mission are the only reasons to have active duty CE troops, leaders, and officials.

Outsourcing will ultimately cause the CE career field to cease to exist.

Our design section is already contracting everything out. How can you get design experience doing QAE stuff?

I think the function of CE will shift from base maintenance to more deployment oriented.

Note: I am in environmental compliance. I feel that I am getting dumber each and every day. Environmental should be outsourced! I am very disappointed in the AF for not giving me the opportunity to work towards my PE. I truly believe that a real BCE should have some sort of registration.

As long as we maintain the ability to sustain readiness through a robusted Red Horse and Prime BEEF training and management concept, I don't think outsourcing will negatively affect us. I don't believe we should be focused on maintaining family housing or grounds or even office buildings anyway. We should be training for our wartime mission. Any O&M that efficiently supports that should be considered for in-house troops. Most everything else should be outsourced. As far as officer career satisfaction, our best opportunities come from leading people. Preferably airmen and NCOs, but managing an O&M contract function can also be an excellent opportunity. There's no harm in having a mix of both.

AEF concept to be blamed for me not serving until retirement. I have been in 9 months and am deploying, also deploying yearly for 3 months at a pop is out of the question.

I feel a stronger mentoring program is needed in CE, especially for new lieutenants.

Outsourcing is a decent strategy for the USAF. However, the way outsourcing is being sold is totally incorrect. "Better services at a lower cost," is overselling outsourcing (our current leadership's method). My experience with contracted-out operations while in a QAE function were miserable. Previous leadership who designed the contract directed limited services to save \$; current leadership wanted all the extras that were outside the scope of the contract, causing enormous pressures on the QAE to come up with all the bells and whistles with no additional \$. Quality of work was low. Less service at lower costs or greater flexibility at higher costs are better slogans for outsourcing. I am already on the way out. My majors board is Jan 00 and I already know I would have had a DP from my command. Outsourcing is just one reason to leave the service like my peers in my age group. Our leadership is the #1 reason people are leaving, at all levels from BCEs to command CEs to higher. This AF is in trouble; I hope someone smart can fix it but no one comes to mind when I look at our present leaders. Good luck with your thesis.

It all depends on how the AF handles competitive sourcing and the subsequent force structure realignment. If we all become QAEs then of course it's going to effect my decisions and ability to get an engineering job on the outside. However, if they make all the military into Red Horse type squadrons CE officers may get even more opportunities to practice the technical side of engineering.

Currently working with contractors and civilian employees, I can confidently say that civilian employees have the AF's interests at heart much more than an outsourced contractor. I actually don't know what my role will be after outsourcing.

Although I plan to leave the AF with a year or so, it's not due solely to outsourcing. I also firmly believe that a civilian job provides more personal rewards (not just material rewards like more pay) with less work hours demanded of each employee. In other words, I'm just not happy with what I am doing.

I am currently working as a QAE for an outsourced BCE function and I do not think the position is as rewarding as one in a bluesuit organization.

Outsourcing the base engineer function is no different than port engineering in the Navy or directors of public works in the Army. The negatives come if emphasis is not increased in the readiness arena. I joined the USAF to do something inherently military, not manage a public municipality.

Outsourcing is a very good tool if used correctly and in the right places. Here at Moron, I see good and bad points. For steady state maintenance of the base, a BMC work force is good, but our mission involves quite a bit of contingency support, with a fluctuating workload. In many instances, a military CE work force would be much more efficient and cost effective. Also, when just a bit extra is needed, you don't have to pay the military more or write a contract modification.

I question career progression opportunities for CE officers as outsourcing increases. Am considering cross training to improve/expand job opportunities.

Excellent survey!

I was under the impression that it is not "outsourcing" but rather "best value competition." Contract service is not the way to go; it really will effect our ability to handle our role in the "agile combat support" arena.

Engineers in the AF will always be second class citizens. The AF cannot compete with private sector in opportunities for money, travel, experience, training, and continuing education, and opportunities for advancement, not to mention location. AF offers no bonuses for retention and very little continuing ed. What is my goal if I stay in? BCE? No thanks!

I am not entirely sure where the USAF is headed with outsourcing. My overall fear is that outsourcing will shrink the career field and remove "good" assignments while leaving a smaller number of officers and enlisted members to fill the "less desirable" assignments and further hinder retention.

The Air Force is sending mixed messages to its CGOs: "We care about your quality of life and retention" but we're going to outsource anyway. A-76 is not a good solution. Pay raises miss the point. Home-basing is the answer, unfortunately it is too late, the CE officer is extinct.

As long as CE retains its wartime mission and the warfighting commands have traditional CE Squadrons, I think the career field will remain strong. As long as I stay in the warfighting commands I would be happy. I do not want to be a QAE!

It would be nice to see the results of this survey. I value the comments of my peers a lot.

We don't do civil engineering as officers on a day to day basis. Outsourcing takes away slots for us to fill. There will only be so many ops chiefs, for example.

I feel like my engineering degree is wasted in the job I am in and was wasted in my previous job. I also don't think CGOs (especially new Lieutenants) should work for civilians. Civilians and military should not work together at all.

Here's the real question: Does outsourcing actually save the USAF short and long term money?

I came in to be in the military and contribute to our nation's defense, not to oversee a bunch of civilian contractors and fight with unions all the time. Outsourcing degrades readiness. We are trying to run an Air Force base, not an airport.

I don't know the details of outsourcing in CE. I have been overseas my entire career, so it has had less effect...and we've had little discussion within CE about this.

Working at a base that has been "outsourced" from its inception, there are definite challenges associated with it. The military/DoD still has the duty and responsibility to lead and challenge the contractors. Outsourcing may not be the most cost effective method to run a base but it does lead to a more stable workforce in these times of frequent deployments. For direct leadership roles and supervisory positions, outsourced bases are not the places to be.

I have a concern that if we outsource civilian jobs they might consider abolishing the CE career field. Now I plan to go in the reserves after 6 or 8 years in the active service. I don't feel that the CE career field as we know it today will exist for the next 20 years.

I do not know what the official Air Force policy is for outsourcing CE functions.

Outsourcing is just one of the areas to consider. Try a survey on ops tempo, deployment rate, PCS rate.

The CE community needs to separate outsourcing initiatives from our real mission of agile combat support; our role as CE officer should not be effected. Wing leaders will have to accept the level of service provided by outsourcing.

I feel the Air Force underuses its engineers. I would love to be doing building design and management under a P.E. All design work in our office is done by contractors and there are no P.E.s in my office.

Jim, I hope the results of your study are widely distributed among those of us "in the trenches." I'm interested to see what everyone else thinks.

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Vita

Captain James F. Kennedy was born on 7 July 1971 in Knoxville, Tennessee. He graduated with a Bachelor of Science in Electrical Engineering from the University of Tennessee in December, 1993. Upon graduation, he received a reserve commission in the United States Air Force.

Captain Kennedy was first assigned to the 20th Civil Engineer Squadron at Shaw Air Force Base, South Carolina as a design engineer, Chief of Readiness, and Squadron Section Commander. In January of 1997, he was transferred to the 8th Civil Engineer Squadron, Kunsan Air Base, Republic of Korea. There he served as the Chief of Engineering Design and Chief of Base Development. In June of 1998 he completed Squadron Officer School at Maxwell Air Force Base, Alabama, en route to his current assignment at the Air Force Institute of Technology.